ON RAISING: A REANALYSIS OF $\bar{S}$-DELETION *

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The paper discusses a number of problems in connection with Chomsky's $\bar{S}$-deletion approach to the analysis of 'exceptional Case-marking' verbs such as *believe,* and proposes a new approach to the effect that English contains a ϕ complementizer that can govern and assign Case, unlike Kayne's (1981) ϕ complementizer, and that a verb may subcategorize a non-argument as its complements, contradicting Chomsky's claim, "Complements of $\bar{X}$ are always θ-positions." The new approach is proved to meet requirements of the principles in the GB theory: the θ-criterion, the Case Filter, the Projection Principle and the Binding theory.

0. In this paper, I will argue that English constructions acounted for by means of $\bar{S}$-deletion mechanism are not an exceptional phenomenon which calls for a special treatment in syntax. In particular, I will demonstrate that constructions involving the so-called 'exceptional Case-marking' verbs like *believe* may be accounted for in a principled way by assuming that they require a particular type of infinitival complement clause, just as 'ordinary' verbs such as *want* and *try* require their respective type of infinitival complement clause as in (1) and (2):

(1) a. John wants to leave the town.
    b. John wants me to leave the town.
    c. *John wants that I leave the town.
(2) a. John tries to leave the town.
    b. *John tries me to leave the town.
    c. *John tries that I leave the town.

In the lexicon, the verb *want* will be specified as taking a clausal complement with both a *for* complementizer[1] and an *e*(mpty) complementizer, whereas the verb *try* is specified as taking a clausal complement only with an *e* complementizer. Thus, we may represent the D-structures of sentences (1b) and (2a) as in (3a) and (b),

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[1] We assume that English contains a *for*-deletion rule in the PF-component, which deletes the complementizer *for* immediately following a verb.

respectively[2]:

(3) a. John wants [$_{\bar{S}}$[$_{COMP}$*for*] [$_{S}$me to leave the town]]
b. John tries [$_{\bar{S}}$[$_{COMP}$*e*] [$_{S}$PRO to leave the town]]

Sentence (1b) is grammatical, because in (3a) the prepositional complementizer *for* can govern[3] and Case-mark the following noun phrase (i.e., subject NP of the infinitival complement). On the other hand, sentence (2b) containing a 'specified' complement subject is ungrammatical, because its complement subject position is ungoverned: the *e* complementizer is not a governor. This means that the subject of a complement in structures like (3b) can only be PRO[4], hence only sentence (2a) is grammatical. Note that (2b) is ungrammatical due to the fact that its complement subject *me* is unable to receive Case, as required by the Case Filter[5].

1. It has been known that the form of a complement is generally determined by the main verb of a sentence in which it is embedded. To be more specific, it is determined by the type of complementizer that it is allowed to take. Consider the following sentences:

(4) a. John mentioned that Mary had left the town.
b. *John mentioned (for) Mary to have left the town.
c. *John mentioned to leave the town.

(5) a. John preferred (for) Mary to leave the town.
b. John preferred that Mary should leave the town.
c. John preferred to leave the town.

(6) a. John forced me to leave the town.
b. *John forced me (for) Mary to leave the town.
c. *John forced (me) that I should leave the town.

(7) a. John persuaded me to leave the town.
b. *John persuaded me (for) Mary to leave the town.
c. John persuaded me that I should leave the town.

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[2] All syntactic representations are simplified, specifying only those syntactic properties relevant for the discussion.

[3] The notion of government is defined as follows:
α governs γ in [β. . .γ. . .α. . .γ. . .], where
(i) $\alpha = X^{\circ}$
(ii) where ϕ is a maximal projection, if ϕ dominates γ then ϕ dominates α
(iii) α c-commands γ

[4] In the GB framework, PRO must appear in an ungoverned position (Chomsky 1981: 56); thus, the following are ungrammatical:
(i) *PRO loves Mary
(ii) *John loves PRO
(iii) *John talks to PRO

[5] The Case Filter is defined as follows (Chomsky 1981: 49):
*NP if NP has phonetic content and has no Case

As shown in (4) and (5), the verbs *mention* and *prefer* are identical in that they both may take a clausal complement, but different in the kind of complementizer they allow for their complement to take: the verb *mention* allows only a *that* complementizer, while the verb *prefer* allows any complementizer in English (i.e., *that, for,* and *e* complementizers). We can say the same thing as to verbs in (6) and (7). *Force* and *persuade* have an identical subcategorization frame in which they may occur, both taking an object NP and a clausal complement, but differ from each other in the kind of complementizer they permit their complements to take: *force* permits only an *e* complementizer, and *persuade* permits both *e* and *that* complementizers. Therefore, it seems that it is not too much to say that almost all verbs in English (perhaps, in all natural languages) are 'exceptional' as far as their complement structures are concerned.

2. Turning to the main issue of the paper, consider the following sentences:

(8) a. John believes Mary to be happy.
b. John berlieves that Mary is happy.
c. *John believes for Mary to be happy.
d. *John believes to be happy.

Naturally, a question arises as to how to deal with grammaticality problems in sentences like (8). Is there any logical reason for us to account for the problems differently, deviating from the logic of the preceding section? Can't we simply say that the sentences in (8a) and (b) are grammatical because the verb *believe* permits a *certain* complementizer in the case of the former and a *that* complementizer in the case of the latter to introduce their complement, just as we say that (8c) and (d) are ungrammatical because the verb does not allow their complement to accompany either *for* complementizer or *e* complementizer? It is obvious that we cannot account for the grammaticality of sentence (8a) with the existing complementizer system of English. For example, we cannot analyze (8a) in the same way as we analyze sentences like (1b), for we can easily find a number of syntactic contrasts between *want*-type verbs and *believe*-type verbs.

Unlike *want*-type verbs, the verb *believe* does not take a complement clause having PRO subject:

(9) a. John wants to be happy.
b. *John believes to be happy.

The verb *want* may take a complement clause with the complementizer *for* when it is not adjacent to the main verb of the sentence, but the verb *believe* may not, regardless of the adjacency of its complement clause to the main verb:

(10) a. John wants very much *for* Mary to be happy.
b. *John believes very deeply *for* Mary to be happy.

As shown in (11), the verb *believe* takes as its infinitival complement subject a reflexive pronoun coreferential with subject of the main sentence, but the verb *want* does

not:

(11)a. *John wants *himself* to be happy.
b. John believes *himself* to be happy.

The verb *believe* has a passive counterpart as in (12b), but the verb *want* does not:

(12)a. *Mary is wanted to be happy.
b. Mary is believed to be happy.

Two approaches have been proposed to solve problems involving sentences like (8a): the $\bar{S}$-deletion approach suggested by Chomsky (1981) and the ϕ complementizer approach suggested by Kayne (1981). We will discuss Chomsky's $\bar{S}$-deletion, first.

Chomsky claims that verbs like *believe* are specified in the lexicon as taking a clausal complement with an *e* complementizer. Thus, we may represent the D-structure of sentence (8a) as in (13):

(13) John believes $[_{\bar{S}}[_{COMP}e]$ $[_{S}$Mary to be happy]]

Since, as we have observed above, the *e* complementizer cannot govern and Case-mark its infinitival complement subject, there is no way to assign Case to the embedded subject in structures like (13). Chomsky, therefore, proposes deletion of $\bar{S}$-node, which functions as a barrier to government[6], from the structure in (13), the result of which is (14):

(14) John believes $[_{S}$Mary to be happy]

Elimination of the barrier to government, $\bar{S}$-node, makes it possible for the verb *believe* to govern, and assign Case to, its infinitival complement subject across the S boundary in (14), hence sentence (8a) being grammatical.

It is not difficult to see how the $\bar{S}$-deletion approach acounts for the ungrammaticality of sentences like (8d) containing a PRO complement subject. In (14) the complement subject position is governed by the verb *believe,* which means that PRO cannot appear in this position. Recall that PRO appears only in an ungoverned position (cf. fn. 4).

Chomsky (1981) extends his $\bar{S}$-deletion mechanism to constructions involving 'raising' predicates. Consider the sentences in (15):

(15)a. John seems to be happy.
b. John is likely to be happy.

The D-structure of (15a), for example, is represented as in (16):

(16) $[_{NP}e]$ seems $[_{\bar{S}}[_{COMP}e]$ $[_{S}$John to be happy]]

The application of Move-α to (16) generates a structure like (17):

[6] Besides $\bar{S}$, NP is also regarded as a barrier to government in English.

(17) John seems $[_{\bar{S}}[_{COMP}e]$ $[_S t$ to be happy]]

(17) cannot be a well-formed structure as it is, because it contains a *t*(race) occupying an ungoverned position[7]. The complementize *e* may not govern the *t* in (17) by definition, and the verb *seem* may not either because $\bar{S}$-node, a barrier to government, intervenes between the verb and *t*. Accordingly, Chomsky proposes to eliminate the barrier to government from (17), deriving a structure like (18) from (17):

(18) John seems $[_S t$ to be happy]

The *t* in (18) is now governed by the verb *seem,* meeting one of the requirements of the theory. Note that the infinitival complement subject *John* in (16) has to move to the empty matrix subject position, where it can be assigned Case, since intransitive predicates like *seem, likely,* etc. cannot assign Case to their complement subject. It is clear from ungrammaticality of sentences like (19) that *John* cannot receive Case from its D-structure position in (16):

(19) *It seems John to be happy.

Kayne (1981) proposes an entirely different analysis of the infinitival complement of *believe*-type verbs, which we will call the ϕ complementizer approach. He assumes that verbs like *believe* take a ϕ complementizer for their infinitival complement, and claims that ϕ is a prepositional complementizer, which can govern and Case-mark the adjacent infinitival subject NP, just as another English prepositional complementizer *for* can. But the former differs from the latter in having no phonetic realization. He suggests that we represent the D-structure of a sentence like (8a) as in (20):

(20) John believes $[_{\bar{S}}[_{COMP}\phi]$ $[_S$Mary to be happy]]

In (20) the infinitival complement subject *Mary* receives Case from the complementizer ϕ, but not from the verb *believe,* as Chomsky (1981) assumes. It is clear from the structure of (20) that PRO may not be subject of the complement, because its position is governed by ϕ.

Kayne extends his assumption to other facts in English; he believes that the fact that a prepositional complementizer can assign Case to the adjacent complement subject in English entails the fact that the language allows preposition stranding as in (21):

(21) John can be relied on.

He claims that only those elements that govern and assign Case 'in the same way' can be reanalyzed. In English both verbs and prepositions can govern and assign

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[7] Chomsky (1981: 56) specifies properties of trace as follows:
(i) trace is governed
(ii) the antecedent of trace is not in a θ-position
(iii) the antecedent-trace relation satisfies the subjacency condition

Case 'structurally' (i.e., in the same way), whereas in French verbs can govern and assign Case structurally, but prepositions can do so only by subcategorization, hence the possibility of preposition stranding being ruled out as seen in (22):

(22) a. *Quel candidat as-tu voté pour?
'Which candidate have you voted for?'
b. *Jean a été voté contre par presque tous.
'John was voted against by almost everybody.'

However, in English structures like (23) can be reanalyzed as in (24), which gives rise to preposition stranding in (21):

(23) $[_{NP}e]$ can be relied $[_{PP}[_{P}$on$]$ $[_{NP}$John$]]$
(24) $[_{NP}e]$ can be $[_{V}$relied on$]$ $[_{NP}$John$]$

I believe that Kayne's analysis of the infinitival complement of English *believe*-type verbs is essentially on the right track.

As Bouchard (1983) indicates, however, Kayne's analysis contains a number of problems. First of all, as Kayne himself admits, French allows the reanalysis of verb and noun, although they hardly govern and assign Case in the same way:

(25) Je veux que soit *mis fin* à la guerre.
'I want that be put an end to the war.'

Secondly, it is not always easy to distinguish 'configurationally' between structural Case assignment and Case assignment by subcategorization, because in the GB framework both subcategorization and structural Case are defined in terms of the notion of government (cf. fn. 3). For example, a verb must govern an element in order to Case-mark and subcategorize it; similarly, it must be governed to be structurally Case-marked.

Another problem was noted by Chomsky (1981); the ϕ complementizer approach cannot provide a natural account of the differerce between *believe* and *want* with respect to the passive[8]:

(26) a. John is believed to be happy.
b. *John is wanted to be happy.

In Kayne's analysis, the D-structures of (26a) and (b) would be represented as in (27a) and (b), respectively:

(27) a. $[_{NP}e]$ is believed $[_{\bar{S}}[_{COMP}for\phi]$ $[_{S}$John to be happy$]]$
b. $[_{NP}e]$ is wanted $[_{\bar{S}}[_{COMP}for]$ $[_{S}$John to be happy$]]$

Both structures in (27) are regarded as containing prepositional complementizers. But only (27a) can be the source of a grammatical passive sentence like (26a). It is obvious that Kayne's system cannot provide a natural account as to why this is so. In the $\bar{S}$-deletion approach, however, the Case that is to be absorbed by passive

[8] In the following section, we will see that passive also causes some trouble in Chomsky's $\bar{S}$-deletion.

morphology is assigned by the verb *believed* itself in (26a), whereas it is the complementizer *for,* not the verb *want,* that assign Case in (27b), which cannot be absorbed by passive morphology (cf. (13a), (13) and (14), and see the following section for further discussion).

Finally, we may raise a question as to Kayne's claim that the English language must contain two prepositional complementizers whose syntactic functions are exactly the same: both ϕ and *for* can govern and Case-mark their adjacent infinitival complement subject. (See Bouchard (1983) for further discussion of the problems in Kayne's analysis.)

3. In this section, we will discuss problems in connection with Chomsky's $\bar{S}$-deletion approach. Chomsky claims that his $\bar{S}$-deletion is a 'marked' (i.e., exceptional) phenomenon in English. When we say that a certain linguistic fact is marked or exceptional, we generally mean that it is found in extremely restricted environment. Consider, however, where Chomsky's $\bar{S}$-deletion may take place. It seems that it takes place in all kinds of complement constructions. In English, a clausal complement may follow an intransitive predicate, a transitive predicate, or a verb + an object NP. Thus, we have the following sets of sentences:

(28) *intransitive predicate + clausal complement*
  a. John seems to be happy: $\bar{S}$-deletion
  b. it seems that John is happy: *that* complementizer
  c. it is important for you to come early: *for* complementizer
  d. it is unclear what to do: *e* complementizer

(29) *transitive predicate + clausal complement*
  a. John believes Mary to be happy: $\bar{S}$-deletion
  b. John said that he was happy: *that* complementizer
  c. John preferred for you to come early: *for* complementizer
  d. John tried to come early: *e* complementizer

(30) *verb + object NP + clausal complement*
  a. John impressed Mary as intelligent: $\bar{S}$-deletion
  b. John told me that he was happy: *that* complementizer
  c. it would please John very much for Mary to be happy: *for* complementizer
  d. John persuaded Mary to come early: *e* complementizer

We may ask whether there is any logical necessity for us to treat the (a) sentences in (28)—(30) differently from the rest. I believe that it is more natural and theoretically more plausible to analyze the (a) sentences above in the way that we analyze the rest of sentences than to employ an ad hoc device like $\bar{S}$-deletion, if possible.

Compare those complementizers, with respect to government and Case-marking, that may introduce an infinitival complement, including Kayne's ϕ complementizer:

(31)

complmentizers	govern	assign Case
e	NO	NO
for	YES	YES
ϕ	YES	YES

Logically, we may add two more complementizers to (31): one that can govern but cannot assign Case, and one that can assign Case but cannot govern. The latter is impossible in the GB framework, because an element must govern in order to be able to assign Case. What about a complementizer that can govern but cannot assign Case? As far as I know, nothing in the theory prevents a language from containing such a complementizer, for we easily find such elements in other parts of speech: adjectives like *likely, certain,* etc., verbs like *seem, appear,* etc., and past participle form of transitive verbs are such elements.

Suppose that Kayne's complementizer ϕ, which he claims can govern and assign Case, is the complementizer that can govern but *cannot assign Case.* In other words, assume that English has the following complementizer system for its infinitival complements instead of (31):

(32)

complmentizers	govern	assign Case
e	NO	NO
for	YES	YES
ϕ	YES	*NO*

Suppose, further, that all the predicates that are assumed to trigger $\bar{S}$-deletion by Chomsky take a ϕ complementizer. Then sentence (28a), for example, would have (33), rather than (16), as its D-structure:

(33) $[_{NP}e]$ seems $[_{\bar{S}}[_{COMP}\phi]$ $[_{S}$John to be happy]]

Since, by definition, the infinitival complement subject *John* cannot receive Case in its D-structure position in (33), it has to move to the position where it can be assigned Case, i.e., to the position of matrix subject as in (34):

(34) John seems $[_{\bar{S}}[_{COMP}\phi]$ $[_{S}t$ to be happy]]

Note that (34) is different from (17) in that the position occupied by t is governed in the former, meeting the requirement of the theory (cf. fn. 7).

4. One would immediately recognize problems in the present proposal in connection with exceptional Case-marking verbs like *believe.* Suppose that the D-structure

of sentence (29a) is represented as in (35):

(35) John believes $[_{\bar{S}}[_{COMP}\phi]$ $[_{S}$Mary to be happy]]

The complementizer ϕ, by definition, cannot assign Case to *Mary* in (35) (cf. (32)). Therefore, (35) may not be a well-formed structure for any sentence in English, because it violates the Case Filter. Then, what kind of structure is appropriate for sentences like (29a)? I propose that the D-structure of (29a) be represented as in (36):

(36) John believes $[_{NP}e]$ $[_{\bar{S}}[_{COMP}\phi]$ $[_{S}$Mary to be happy]]

The derivation of sentence (29a) from (36) is straightforward: Move-α moves the complement subject *Mary* to the empty *object* position of the sentence, generating (37):

(37) John believes Mary $[_{\bar{S}}[_{COMP}\phi]$ $[_{S}t$ to be happy]]

Chomsky (1981: 99-100) explicitly rejects the idea of deriving sentence (29a) from a structure like (36). He says that sentence (39) is considerably less acceptable than sentence (38):

(38) I told Bill myself to leave the room
(39) I expected (believed) Bill myself to be a liar

Chomsky assumes that (38) and (39) are derived from (40) and (41), respectively, by applying Move-α to *myself*.

(40) I myself told Bill $[_{\bar{S}}$PRO to leave the room]
(41) I myself expected (believed) [Bill to be a liar]

"Then Move-α can move *myself* either to the left or the right boundary of the embedded clause. . . ." (Chomsky 1981: 99). Assuming (39) to derive from (42) rather than (41), we cannot account for the low degree of acceptability of (39).

(42) a. I myself expected (believed) Bill [to be a liar]
b. I myself expected (believed) Bill [PRO to be a liar]

Another example that Chomsky puts forth to support his claim is, ". . . although insertion of adverbs and other quantifiers is fairly free so that the distinctions are not sharp, there is surely a tendency in the direction of preferring" (Chomsky 1981: 100) (43) to (44):

(43) a. John promised Bill sincerely to visit him tomorrow.
b. John forced Bill angrily to leave.

(44) John expected (believed) Bill sincerely to be more forthcoming.

Compare Chomsky's (39) and (44) with (45) and (46), respectively:

(45) I wanted Bill myself to be a liar.

(46) John wanted Bill sincerely to be more forthcoming.

(45) and (46) are considerably less acceptable than (39) and (44), which means that Chomsky's arguments do not wholly support his conclusion on the structure of *believe*-type verbs.

Let's return to (36) and (37). The θ-criterion[9] of the theory requires that an argument (i.e., an NP) move to a non-θ-position. This means that the position *Mary* occupies in (37) must be a non-θ-position. Chomsky (1981: 47) claims, however, "The position of subject may or may not be a θ-position, depending on properties of the associated VP. Complements of $\overline{X}$ are always θ-positions. . . ." As far as I know, Chomsky has not given any logical and/or theoretical reason why his claim must be maintained even in the GB framework. If there are verbs or VPs that may or may not θ-mark subject, then we can logically expect that there may be verbs that may or may not θ-mark their complements.

I believe that idiom chunks provide direct evidence against Chomsky's claim; in verb-object idioms like *take advantage (of), keep tabs (on), pay attention (to),* etc., object NPs (i.e., complements) of verbs are not θ-marked. Chomsky (1981: 37) says, "In the case of the idiom "take advantage of Bill," for example, no actual θ-role is assigned to *advantage,* though we might say that the idiom rule that converts the phrase "take advantage of" into a derived lexical item permits this derived item to θ-mark the object Bill."

Another piece of evidence that strongly supports the claims that a transitive verb may have a non-argument as its complement is found in the following example:

(47) a. John believes *it* that Mary is sick. (Guéron 1981: 103)
b. I believe *it* with no difficulty that John has convinced Bill. (Rosenbaum 1967: 58)
c. They doubt *it* that you will go. (Rosenbaum 1967: 34)
d. John would hate *it* for him to win. (Chomsky 1981: 190)
e. She did not like *it* that Jasper should shoot birds. (Woolf 1927: 90)

Where does this pleonastic non-argument *it* come from in (47)? It cannot come into being by the result of application of a traditional transformational rule called "Extraposition," by which we used to derive sentences in (48):

(48) a. It is obvious that the world is round.
b. It was proved by Magellan that the world is round.
c. It might be unwise for Suzie to buy a polar bear.

It seems that the GB theory allows only what we used to call "Extrapostion from NP," which does not leave behind a pleonastic expression like *it*: compare the sentences in (49) (cf. Chomsky 1981: 56).

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[9] The θ-criterion is defined as follows (Chomsky 1981: 36):
Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument.

(49) a. A man who John knows was here.
b. A man was here who John knows.

The only possible source of *it* in (47), I believe, is the consequence of application of the *same* rule (perhaps, in the PF component) that inserts *it* in the non-θ-position of subject in sentences like (48). Since a non-θ-position cannot be brought into being by applying Move-α, it must be generated in the base. If my argument is correct, sentences like (47) strongly support the legitimacy of structure (36).

Next, consider the following sentence from Chomsky (1981: 125):

(50) It was believed that the conclusion was false.

The D-structure of (50) is represented by Chomsky as in (5):

(51) $[_{NP}e]$ was believed $[_{\bar{S}}$that the conclusion was false]

No movement is involved in deriving (50) from (51); simple insertion of *it* into the non-θ-position of the subject converts (51) into (50). Chomsky (1981: 124) claims, however, ". . . the unique property of the passive morphology is that it in effect "absorbs" Case: one NP in the VP with the passive verb as head is not assigned Case under government by this verb." Move-α has to apply to structures like (52), for example, because Case of *John* is absorbed by its passive morphology.

(52) $[_{NP}e]$ was killed John

The passive morphology of (51), however, does not have the "unique property of the passive morphology": that is, no NP within the VP with the passive verb as head has 'potential Case' that is to be absorbed by the passive morphology in (51). If we allow the passive morphology to occur even when there is no Case that is to be absorbed by it, how can we rule out (53) as non-sentences in English?

(53) a. It is seemed that John is happy.
b. John is seemed to be happy.

Suppose, however, that the D-structure of (50) is something like (54):

(54) $[_{NP}e]$ was believed $[_{NP}e]$ $[_{S}$that the conclusion was false]

Unlike (51), (54) contains an NP (governed by the verb *believed*) whose Case can be absorbed by its passive morphology. If the present proposal is accepted, we have to reconsider Chomsky's claim (1981: 125), ". . . , passive morphology, . . . , is not necessarily associated with movement and assumption of a new GF."

Koster (1978)[10] makes a claim similar to the present proposal as to the structure of *believe*-type verbs having an infinitival complement. He says, ". . . , there does

[10] Koster's theory differs from Chomsky's in that the former contains no transformation like Move-α.

not seem to be an obvious argument against (56) as a deep structure'' (Koster 1978: 146) of sentence (55):

(55) John believes the dog to be hungry.
(56) John believes *the dog*$_i$ [$_{\bar{S}}e_i$ to be hungry]

Then, he claims, ''If we assume non-argument status for the NP-objects of verbs like *believe*'' (Koster 1978: 146), we can naturally account for all sentences in (57):

(57) a. Joan believes *there* to be trouble in the Congo.
b. Joan believes *the shit* to be about to hit the fan.
c. Joan believes *the jig* to be up.
d. Joan believes *little heed* to have been paid to my suggestion.

I am not going to review various arguments for and/or against object status of the infinitival complement subject of a *believe*-type verb (See Brame (1979), Bresnan (1976), and Postal (1974)). It seems that there are as many arguments supporting object status of the infinitival complement subject in sentences like (29a) as those supporting its subject status.

We may employ the present claim for analysis of small clauses in English. Consider the following sentences:

(58) a. John considers Bill to be foolish.
b. John impressed me as intelligent.

The D-structures of the sentences above will be represented as in (59a) and (b), respectively, in the present system:

(59) a. John considers [$_{NP}e$] [$_{\bar{S}}\phi$[$_S$Bill to be foolish]]
b. [$_{NP}e$] impresses me [$_{\bar{S}}\phi$[$_S$John as intelligent]]

The derivation of (58) from (59) is straightforward: Move-α moves the complement subject to the empty NP position, where it can be assigned Case, as required by the Case Filter. Obviously, the present analysis can do away with Chomsky's *ad hoc* principle (60) (Chomsky 1981: 107):

(60) Small clauses are not maximal projections

5. Let's consider here whether the present proposal meets the requirements stipulated in the Principles of the GB theory. Specifically, we will consider whether the structures of (36) and (37) satisfy the θ-criterion, the Case Filter, the Projection Principle and the Binding theory.

Needless to say that (37) meets the θ-criterion, because the object NP receives its θ-role from its D-structure position in (36). Note that the position that *Mary* moves to is a non-θ-position. On the other hand, *Mary* receives its Case from S-structure position in (37), hence the Case Filter being satisfied. As is the case in (33), the infinitival complement subject in (36) has to find, or move to, a position where it can be assigned Case, because the complementizer ϕ can govern but cannot

assign Case.

The Projection Principle of the GB theory requires that all syntactic representations (i.e., LF, and S- and D-structure) observe the subcategorization properties of lexical items (cf. Chomsky 1981: 27)[11]. It is obvious that the D-structure (36) and the S-structure (37) of sentence (29a) do not violate the Projection Principle; the verb *believe* is specified as having the subcategorization feature [____NP $\bar{S}$] in the lexicon, exactly like verbs such as *persuade*. But *believe* is different from *persuade* in that the object NP is a non-argument in the former.

Finally, let's examine whether the *t* in (37) observes principles of the Binding theory. An NP-trace, which is classified as anaphor in the GB theory, must obey principle (A) of the Binding theory: an anaphor is bound in its governing category[12] (Chomsky 1981: 188). Since in (37) the matrix S is the minimal sentence containing *t* and its governor ϕ, it is the governing category. The trace *t* is bound by its antecedent *Mary* in (37), meeting principle (A) of the Binding theory.

So far, we have found no violations of principles of the GB theory, which means that the present proposal can be integrated naturally into the general framework of the theory.

[11] The exact definition of the Projection Principle is as follows (Chomsky 1981: 38):

(i) if β is an immediate constituent of γ in (5) at L_i, and $\gamma = \bar{\alpha}$, then α θ-marks β in γ

(ii) if α selects β in γ as lexical property, then α selects β in at L_i

(iii) if α selects β in γ at L_i, then α selects β in γ at L_i

[12] α is the governing category for β if and only if α is the minimal category containing β and a governor of β, where $\alpha =$ NP or S (Chomsky 1981: 188).

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